KUZNETSOV, N.M., inzhener.

Efficiency suggestions. Bum.prom.31 no.3:25-26 Mr '56. (MLRA 9:7)
    (Papermaking machinery)

KUZNETSOV, N.M., inzh.; SUKHAREVA, R.A., red.; GARNUKHIN, Ye.K.,
        tekhn. red.

   [Collection of inventions; woodpulp and paper industries]
   Sbornik izobretenii; tselliuloznaia i bumazhnaia promysh-
   lennost'. Moskva, TSentr. biuro tekhn.informatsii, 1961.
   90 p.   (MIRA 15:7)

   1. Russia (1923- U.S.S.R.) Komitet po delam izobreteniy i
   otkrytiy.
                 (Woodpulp industry—Equipment and supplies)
                 (Paper industry—Equipment and supplies)

KUZNETSOV,N.M., starshiy instruktor peredovykh metodov truda

    Device for cutting slab joints. Sbor.mat.o nov. tekh.v stroi.
    17 no.6:30 '55.   (MIRA 8:9)
                (Concrete slabs)

ALTUNDZHI, Sergey Vladimirovich; BUKHARIN, Viktor Vladimirovich;
DOBKINA, Yevgeniya Abramovna; KUZNETSOV, Nikolay Mikhaylo-
vich, inzh.; POPOVA, Kseniya Georgiyevna; TEBIKOV, Aleksandr
Dmitriyevich; FRADIN, Leon Romanovich; BADYL'KES, I.TS.,
doktor tekhn.nauk, retsenzent; SKIRSTYMONSKIY, A.I., inzh.,
retsenzent; PRITYKINA, L.A., red.; SOKOLOVA, I.A., tekhn.red.

[Production and use of liquid carbonic acid] Proizvodstvo i
primenenie zhidkoi uglekisloty. Moskva, Pishchepromizdat,
1959. 207 p.   (MIRA 13:2)
                    (Carbonic acid)

KUZNETSOV, Nikolay Mikhaylovich; LEBEDEV, Mikhail Alekseyevich;
YEFREMOV, V.S., nauchnyy red.; VLASOVA, Z.V., red.; TSAL, R.K.,
tekhn.red.

[Combustion chambers of marine boilers operating on oil] Topochnye
ustroistva sudovykh parovykh kotlov s neftianym otopleniem. Lenin-
grad, Gos.soiuznoe izd-vo sudostroit.promyshl., 1959.   206 p.

(MIRA 14:1)

(Boilers, Marine)

84312

5.4300   1142, 1160 only

10.6121 2615 2207 only

S/170/60/003/009/003/020
B019/B060

AUTHOR: Kuznetsov, N. M.

TITLE: The Structure of Shock Waves in the Air Taking the Kinetics
               of Chemical Reactions Into Account

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 9,
               pp. 17-24

TEXT: The author studied the dissociation zone and the chemical reaction
zone in the air, the relaxation of intramolecular oscillations being
assumed to stop altogether at the moment when dissociation begins. Such
reactions as are likely to occur in the shock wave in rarefied air are
discussed first, and formula (9) is given for a description of temperature
in the shock-wave front at those intensities, at which nitrogen is not
yet practically dissociated. The author then deals with that range of
shock-wave intensity, where O_2 is completely, and N_2 is partially dis-
sociated. Formulas similar to (9) are derived. On the strength of formulas
obtained here, a graph (Fig. 1) is given to illustrate the temperature
behind the shock wave as a function of the distance from the front, and

Card 1/2

84312

The Structure of Shock Waves in the Air Taking   S/170/60/003/009/003/020
the Kinetics of Chemical Reactions Into   B019/B060
Account

another graph (Fig. 2) shows the temperature as a function of the time
during which the particles remain behind the shock-wave front. Finally,
the distribution of concentration of air components is examined. It is
stated as a general conclusion that the temperature in the nonequilibrium
region can be determined with sufficient accuracy from the concentration
of oxygen and nitrogen molecules. The time until establishment of equi-
librium at low temperatures is determined from the dissociation rate of
oxygen. At high initial temperatures this time is determined from the dis-
sociation rate of oxygen, nitrogen oxide, and the rate of reaction
$NO + O \longrightarrow N + O_2$. The concentration distribution of nitrogen oxide
behind the wave front can be obtained from the temperature profile.
Frank-Kamenetskiy is mentioned. The author thanks V. N. Kondrat'yev,
Yu. S. Sayasov, and A. S. Kompaneyets for their discussions and interest
displayed. There are 2 figures and 3 references: 1 Soviet and 2 US.

SUBMITTED: May 3, 1960

Card 2/2

84725

10.8000 *only 23•7, 2407*
10.6121
26.2311

S/057/60/030/010/004/019
B013/B063

AUTHORS: Skvortsov, Yu. V., Komel'kov, V. S., and Kuznetsov, N. M.

TITLE: Expansion of a Spark Channel in a Liquid

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 10,
              pp. 1165-1177

TEXT: The work reported on here was conducted in the years from 1956
to 1958 and dealt with initial stages of expansion of a strong spark
channel after breakdown. The electric circuit of the experimental setup
(Fig. 2) is shown in Fig. 1, its design has been described in Ref. 6.
Figs. 3 and 4 provide examples of oscillograms of voltage and discharge
current. Some of the results obtained from the oscillograms are collected
in Table 1. Oscillograms of current $I(t)$ and voltage $V(t)$ permit calculat-
ing the energy W liberated at a given instant: $W(t) = \int_{0}^{t} I(t)V(t)dt$.
Results obtained by such a calculation are given in Fig. 5 a,b; Fig. 6
illustrates the dependence of the initial rate of energy liberation W_n
on the initial gradient $\dot{I}$ of the current. Fig. 7 shows the time dependence

Card 1/3

84725

Expansion of a Spark Channel in a Liquid   S/057/60/030/010/004/019
                                              B013/B063

of current density j (a/cm^2), Fig. 8 that of conductivity. The discharge
pictures of Figs. 9 and 10 show three characteristic sections, namely,
the spark channel, the shock wave front, and an intermediate region. Minor
perturbations propagating from the channel to the shock wave front are
distinctly discernible in the latter. The dependence of the channel radius
r_k on time is shown in Figs. 9 and 11, while the modification of the
radius of the shock wave front r_f in time is shown in Fig. 12. Table 2
contains values of V_k (expansion of discharge channel) and D (rate of
motion of shock wave front) for various growths of current. A striking
aspect is the little dependence of these quantities on the initial con-
ditions in the discharge chain. Experiments have shown that the energy
liberated in the spark channel, the pressure and the expansion rate of the
channel, the velocity of the shock wave arising on a discharge in a liquid,
mainly depend on the parameters of the discharge chain. The initial
gradients in the channel attain 10^4 v/cm. Energy liberation is protracted
over the whole half-period, and attains $2.5 \cdot 10^4$ joules at $\dot{1} = 2.10$ a/sec
and $t = \frac{T}{4}$. At a steeper growth of current, the energy maximum in the unit
volume of the channel shifts with time toward the beginning of spark

Card 2/3

84725

Expansion of a Spark Channel in a Liquid

S/057/60/030/010/004/019
B013/B063

development. It amounts to 10^4 joule/cm^3 for the mentioned parameters. Due to persistent energy liberation, the rates at which the channel expands and the shock wave propagates remain the same during 1 - 2 half-periods of the discharge current. The present paper gives a hydro- dynamic calculation for the pressure field and for the velocities behind the shock wave front (Figs. 13, 14). At $W_n = 3 \cdot 10^9$ joule/sec the peak pressure is $2.8 \cdot 10^4$ in the channel, and $2 \cdot 10^4$ atmospheres at the shock wave front. According to rough estimations the gas temperature in the channel attains several tens of thousands of degrees. The temperature peak in time shifts toward the beginning of discharge on a steeper growth of current. Fig. 15 shows the dependence of energy W released in the channel (joule/cm^3) on time. The authors thank M. V. Zol'nikov, V. N. Dudorov, and P. T. Shevtsov for their assistance in the experiments. There are 15 figures, 2 table, and 10 references: 8 Soviet.

SUBMITTED: April 21, 1960

Card 3/3

KUZNETSOV, N.M. (Moskva)

Equation of state and heat capacity of water in a wide range
of thermodynamic parameters. PMTF no.1:112-120 Ja - F '61.
(MIRA 14:6)
(Equation of state) (Heat capacity) (Water--Thermal properties)

1.1210

31644
S/207/61/000/006/021/025
A001/A101

AUTHORS: Anisimov, S. I., Kuznetsov, N. M. (Minsk, Moscow)

TITLE: Self-modeling problem of strong explosion in water

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 6, 1961,
             167-168

TEXT: The authors consider the self-modeling problem of strong explosion
for the case when disturbed motion is spherically symmetric and temperature T_2
(at the shock wave front) exceeds considerably $3,000^{\circ}$K. The equation system
of central-symmetrical adiabatic motion in partial derivatives is transformed
into a system of ordinary differential equations and its order is lowered by
using integrals of energy and adiabaticity following from the self-modeling
nature of the motion (investigation of self-modeling solution was conducted by
N. N. Kochina and N. S. Mel'nikov) and, after transformations, one differential
equation of the first order is obtained. This equation is integrated numerically
and the results for velocities, pressures and densities as functions of distances
traveled by the shock wave are tabulated and presented graphically. An equation
is derived which enables one to calculate the distance r_2 traveled by the shock

Card 1/2

31644
S/207/61/000/006/021/025
A001/A101

Self-modeling problem of strong explosion ...

wave, for which the self-modeling solution is applicable with sufficient accuracy:

$$T_2 = 0.22 \times 10^{-8} \frac{E}{r_2^3} \qquad (11)$$

where E is full energy of explosion. There are 1 figure, 1 table and 3 Soviet-bloc references.

SUBMITTED: August 28, 1961

Card 2/2

11·8200

26335
S/076/61/035/007/004/019
B127/B208

AUTHOR: Kuznetsov, N. M.

TITLE: Equation of state of the products of Hexogen detonation

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 7, 1961, 1430 - 1434

TEXT: At low charge densities ($\rho_1 \lesssim 0.5$ g/cm^3) the particles of the detonation may be described by the equation of state of real gases. At high densities they may be regarded as solids and the Landau-Stanyukovich equation $p = A\rho^n + B\rho T$ may be used approximatively. A, B, n are constants, p is the pressure, ρ the density and T the temperature. The author assumes a linear temperature dependence of energy and pressure of the detonation products: $p = p_y(\rho) + B(\rho)\rho T$ (2) and $E = E_0 + E_y(\rho) + C_v T$ (3). E_0 is a constant, C_v the specific heat at constant volume. By means of the values D, ꝡ and u at the front of the detonation wave the density ρ_2, the pressure p_2, the energy E_2 and the sound velocity C_2 at the Jouguet point may be de-

Card 1/5

Equation of state ....

termined from the following equations: $D = u/(1 - \rho_1/\rho)$, $p = \rho_1 D^2 (1 - \rho_1/\rho)$, $E_2 = u^2/2 + Q$, $C_2 = D - u$. T eliminated from (2) and (3) gives

$p = p_y + \rho \mu (E - E_0 - E_y)$ (4). From $E = \int \left[p - T \left(\frac{\partial p}{\partial T} \right)_\rho \right] \frac{d\rho}{\rho^2} + f(T)$ follows

$E_y = \int \frac{p_y}{\rho^2} d\rho$ and $f(T) = \int C_v dT = E_0 + C_v T$ (5). If the specific heat

constant at all temperatures, $E_0 = 0$. $\frac{p}{\rho} = \frac{p_y}{\rho} + \mu (E - \int_{\rho_0}^{\rho} \frac{p_y}{\rho^2} d\rho - E_0)$ (6)

is then obtained from (4) and (5). $Tds/d\rho$ is determined from

$Tds = dE - \frac{p}{\rho^2} d\rho$. It follows $\mu(\rho) - \mu_2(\rho) = \frac{p_2' - c_2^2}{(\rho E')_2 - p_2/\rho 2}$ (8). The

variable $y = p/\rho - p_y/\rho$ is substituted in (6); $E = E_0 - \int \frac{p}{\rho^2} d\rho + \int \frac{y}{\rho} d - \frac{y}{\mu}$ (9)

(9) is differentiated with respect to $p_2 = p_2(\rho)$, and gives after further

Card 2/5

Equation of state ...

26335
S/076/61/035/007/004/019
B127/B208

reduction $y_2 = \int \rho \exp\left\{\int \frac{\xi}{\rho} d\rho\right\}\left[\int \exp\left\{-\int \frac{\xi}{\rho} d\rho\right\}\left(E_2' - \frac{P_2}{\rho^2}\right) d\rho + C_1\right]$. At $T = 0$

in the liquid phase the density of the detonation products equals $\rho = \rho_0$

at which $p_y = 0$. At sufficiently low temperatures, they practically exist

only in the liquid phase. The mean density ρ_0 was determined to be

0.82 g/cm^3 with an error of 5-10%. Basing on the experimental results by

A. N. Dremin and Yu. Lebedev the author arrived at the following relations:

$u = D/3.6$, $D = 2.58 + 3.47 \rho_1$ for $1.2 < \rho_1 < 1.8$; $Q = 1204 + 172 \rho_1$ for

$0.5 < \rho_1 < 1.8$. The results of calculation are presented in Table 2. It

may be seen from the results that the thermal pressure p_t and an "elastic"

pressure p_y are equal at $\rho \sim 1.3$ g/cm^3. $p_t \gg p_y$ for $\rho \simeq 0.9$ g/cm^3,

$p_t \ll p_y$ for $\rho \simeq 2.0$ g/cm^3. The solid-state model is applicable when

$\rho \sim 2$ g/cm^3; when $\rho \sim 1$ g/cm^3, the products of Hexogen detonation may be

regarded as gas. In the latter case the specific heat of the detonation

products may be determined by statistical ideal-gas formulas, the innermo-

Card 3/5

Equation of state ...

26335
S/076/61/035/007/004/019
B127/B208

lecular vibrations being taken into account. This calculation is not only applicable to detonation products, but also to other substances, e.g., metals. There are 3 tables and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The reference to English-language publication reads as follows: C. Hodgman, Handbook of Chemistry and Physics. 33rd edition.

ASSOCIATION: Akademiya nauk SSSR Institute khimicheskoy fiziki (Academy of Sciences, Physicochemical Institute)

SUBMITTED: March 27, 1959

Table 2, Legend:
1) ρ, g/cm^3
2) $y_2 \cdot 10^{-3}$ kg·cm/g
3) $P_y/\rho \cdot 10^{-3}$ kg·cm/g
4) $P_2/\rho^2 \cdot 10^{-3}$ kg·cm/g
5) E cal/g
6) $\int_{0.8}^{\rho} \frac{P_y}{\rho^2} d\rho$ cal/g

Card 4/5

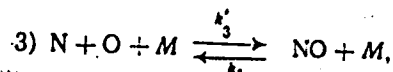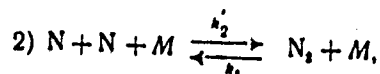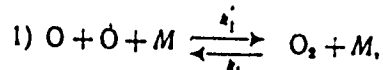*11.6 3C0*
10.1220

38062
S/170/62/000/006/010/011
B117/B138

AUTHOR: Kuznetsov, N. M.

TITLE: Kinetics of chemical reactions in expanding air

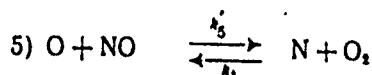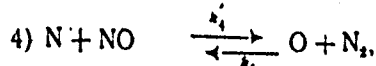PERIODICAL: Inzhonerno-fizicheskiy zhurnal, no. 6, 1962, 97 - 101

TEXT: The problem of a flow round a blunt body moving at hypersonic speed in the atmosphere was dealt with. Earlier papers (R. Duff., N. Davidson, J. Chem. Phys., 31, no. 4, 1018, 1959; author, IFZh, no. 9, 1960) investigated the zonal structure of non-equilibrium chemical reactions in the shock wave, and admissible simplifications:

1) $O + \dot{O} + M \underset{k_1}{\overset{k_1'}{\rightleftharpoons}} O_2 + M,$

2) $N + N + M \underset{k_2}{\overset{k_2'}{\rightleftharpoons}} N_2 + M,$

3) $N + O + M \underset{k_3}{\overset{k_3'}{\rightleftharpoons}} NO + M,$

Card 1/4

Kinetics of chemical reactions ...

4) $N + NO \xrightleftharpoons[k_6]{k_4} O + N_2$,

5) $O + NO \xrightleftharpoons[k_6]{k_5} N + O_2$

It was shown in the present paper that the equations for chemical kinetics in expanding air can be much simplified and expressed in the form of a simple differential equation of the first order as well as algebraic equations. Such a single differential equation was derived from an analysis of the recombination of nitrogen:

$$\frac{d\beta}{dt} = n \left(k_2' + \frac{\alpha_A}{\beta_A} k_3' + \frac{\alpha_A^2}{\beta_A^2} k_1' \right) (n_0 \beta_A^2 - K_2 \beta). \qquad (6).$$

Concentrations of other components can be determined from the equations: $\gamma \beta_A / \beta \alpha_A = K_4$ (1) and $\alpha \beta_A^2 / \alpha_A^2 \beta = K_6$ (3) or from $\alpha \beta_A / \gamma \alpha_A = K_5$ (2) and (3), and from the conditions for the conservation of the original air composition $2\alpha + \alpha_A + \gamma = 0.42$, $2\beta + \beta_A + \gamma = 1.58$ (7). Composition as-

Card 2/4

Kinetics of chemical reactions S/170/62/000/006/010/011
B117/B138

sumed: 79 % nitrogen and 21 % oxygen. It is essential for the dynamics of flow that oxygen may recombine after almost complete nitrogen recombination when the expanding air is sufficiently cooled:

$d\alpha/dt = k_1' n (n_o \alpha_A^2 - K_1 \alpha)$ (9). The other concentrations can be determined from (1), (3), and (7). Finally, the case is discussed when the flow is not affected by chemical reactions, and the problem of flow round a body and the determination of gas-component concentrations have to be treated separately, i. e., when reactions (4) and (5) are not 'quasi-equilibrium" and reactions (1), (2), and (3) are "frozen". In this case, Eq. (1) and (2) are not fulfilled. The approximation described is useful if the gas dynamics is noticeably affected by the chemical kinetics. Symbols used in the paper: M = any particle; n = number of moles per unit volume; component concentrations: $\alpha = O_2$; $\beta = N_2$; $\alpha_A = O$; $\beta_A = N$; $\gamma = NO$; $K_1 - K_5$ = equilibrium constants of reactions (1) - (5); K_6 = constant of chemical equilibrium of the total reaction $N_2 + 2O \rightleftharpoons 2N + O_2$, which is in quasi-equilibrium.

Card 3/4

Kinetics of chemical reactions ...

S/170/62/C00/006/010/011
B117/B138

ASSOCIATION: Institut khimicheskoy fizik: . : SSSR, & . Moskva (Institute
of Chemical Physics AS USSR,   :ow)

SUBMITTED: August 25, 1961

Card 4/4

L 61257-65   EWT(1)/EWP(m)/EWA(h)/FCS(k)   Pd-1/Pt--

AP5002876

S/0207/64/000/005/0140/0141

Kuznetsov, M. M. (Moscow)

The structure of shock waves at first order phase transitions

Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1964, 140-141

shock wave, phase transition, thermodynamic equilibrium, adiabatic

The author examines the qualitative character of shock-wave structure in the case when $\Delta p < 0$, where Δp is the pressure difference between the "frozen" and equilibrium branches of the shock adiabatic. For ... shock waves, since Δp is always ...

... in the pV plane shifts along a chord of the curve. The density and ... decrease. Figure 1 shows this behavior, ... density ... the case of two-wave configuration. ...

R: AP5002876

TED: 27Dec63   ENCL: 02   SUB CODE: ME

NC REF SOV: 005   OTHER: 001

Card 2/4

ACCESSION NR: AP4037640   S/0096/64/000/006/0055/0056

AUTHOR: Kuznetsov, N. M. (Doctor of technical sciences, Professor); Burakov, B. A. (Candidate of technical sciences)

TITLE: Investigation of   critical   heat   flows during boiling of a diphenyl mixture in a large volume

SOURCE: Teploenergetika, no. 6, 1964, 55-56

TOPIC TAGS: diphenyl mixture, critical heat   flow, boiling crisis, critical thermal load

ABSTRACT: The authors used pressure ranges from atmospheric to critical to study formation of the crisis in vertical stainless steel tubes having an I.D. of 4 mm, an O.D. of 6 mm, and 150-300 mm lengths. The tubes were installed along the axes of a vertical cylindrical drum, having a diameter of 180 mm and a length of 800 mm, filled with the diphenyl mixture. The mixture was given a dependence of $q_{crit} = f(p)$ which was obtained by the following formula:

$$q_{crit} = 3.72 \cdot 10^4 \, P_{crit} \, \left(\frac{p}{P_{crit}}\right)^{0.35} \cdot \left(1 - \frac{p}{P_{crit}}\right)^{0.9} \, w/m^2 \qquad (1)$$

Card 1/2

ACCESSION NR: AP4037640

Curves are shown which compare the authors' results with those of other investiga-
tors who used other organic mixtures; the results were essentially the same.
Orig. art. has: 1 formula and 2 figures.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: TD

DATE ACQ: 22Jun64

NO REF SOV: 004

ENCL: 00

OTHER: 001

Card 2/2

Teplofizika vy*sokikh temperatur

ACCESSION NR: AP4042459

... are used and their temperature dependences taken into account. ... the kinetics of the excitation of the molecular oscilla-... of the nitrogen is allowed for and the calculations are made ... the entire interval ... the parameters of the shock ... the chemical kinetics ...

... structure. Another account of the non-... work is that account of the non-... temperature behind the front of the shock wave. ... tained by numerically integrating the equations of the chemical ... ion kinetics and the relaxation equation for the excitation of ... ar vibrations of nitrogen. The extrema of pressure and den-... the structure of the wave and discussed in light of the ex-... results of the calcula-... with the previously ... Kuznetsov ... references ...

... near most pronounced ... at high ...

Card   2/3

L 11376-65

ACCESSION NR: AP4042459

about 20% for the temperature distribution. The discrepancies are attributed essentially to the allowance for vibrational relaxation.

art. has: 2 figures, 6 formulas, and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki, Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR (Institute

NR REF SOV:

ACCESSION NR: AP4028949

AUTHOR: Kuznetsov, N.M.

S/0057/64/034/004/0624/0629

TITLE: Influence of radiation on the ionization structure of a shock wave

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.4, 1964, 624-629

TOPIC TAGS: shock wave, ionization, shock wave ionization, electron avalanche ionization mechanism, recombination radiation absorption ionization

ABSTRACT: In this paper the kinetics of approach to ionization equilibrium in a hot gas is discussed, and the non-equilibrium region behind a shock front is considered in the light of the results obtained. Only two ionization mechanisms are considered: the electron avalanche mechanism discussed by H.Petschek and S.Byron (Ann. Phys.1,270,1957), and ionization by absorption of recombination radiation produced in the more highly ionized regions. The gas is regarded as filling all space, and the relative ionization is assumed to depend only on the one Cartesian coordinate x and to fall monotonically from the equilibrium value at x = -∞ to zero at x = +∞. The electron avalanche process is rapid when the relative ionization is sufficiently great (about 10^{-3} or more), but it is very slow for low values of the ionization.

Card 1/3

ACCESSION NR: AP4028949

At large negative values of x, therefore, ionization will proceed almost entirely by the avalanche mechanism, whereas at large positive values of x it will be the result of other mechanisms, of which only recombination radiation absorption is considered. Somewhere between there will be a neutral plane or ionization front, at which ionization by the two mechanisms takes place at the same rate. As ionization proceeds, this ionization front will move in the positive x direction. The propagation velocity of the ionization front is calculated. It is assumed for simplicity that only the avalanche mechanism is effective to the left of the ionization front and only approximations of a purely mathematical nature are introduced. The rate of ionization by the avalanche process is taken from Petschek and Byron (loc.cit.) and the rate of production of recombination radiation is calculated from its absorption cross section (for a hydrogen-like atom) by the principle of detailed balance with the assumption that in non-equilibrium conditions it is proportional to the square of the electron density. The velocity of the ionization front is found to depend on the temperature, density, molecular weight, and ionization potential of the gas, and on a coefficient given by Petschek and Byron that determines the rate of the avalanche process. The nature of the non-equilibrium region behind a shock wave is determined by the relative velocity of the ionization front and the shock front. If the ionization front would propagate more rapidly in an infinite gas than the shock

Card 2/3

ACCESSION NR: AP4028949

front, it cannot lag behind the shock front by more than about a radiation absorption length, and the present mechanism determines the structure of the non-equilibrium region. In this case the width of the non-equilibrium region is about 1/100d cm, where d is the density of the gas in units of its density at standard conditions. If the shock front propagates more rapidly than the ionization front, the present mechanism is not capable of establishing steady conditions, and the structure of the non-equilibrium region will be determined by other ionization mechanisms not considered here. For hydrogen, the critical temperature at which the velocity of the ionization front becomes equal to that of the shock front is 2.4×10^4 ^oK for $d = 1$, and 10^4 ^oK for $d = 10^{-4}$. Orig.art.has: 36 formulas.

ASSOCIATION: Institut khimicheskoy fiziki, Moscow (Institute of Chemical Physics)

SUBMITTED: 28Feb63

SUB CODE: PH

DATE ACQ: 28Apr64

NR REF SOV: 003

ENCL: 00

OTHER: 002

Card 3/3

KUZNETSOV, N.M.

Break of shock adiabate in the phase transition of the first kind.
Dokl. AN SSSR   155   no.1:156-159 Mr   '64.   (MIRA 17:4)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno
akademikom V.N.Kondrat'yevym.

1. 46170-65   EWT(1)/EPA(s)-2/EWT(m)/EPF(n)-2/T/EWP(t)/EEC(b)-2/EWP(b)/EWA(c)

IN YP: AB   IO: 0112/0114

AUTHOR: Kuznetsov, N. M. (Moscow)

concerning the kinetics

the surfaces of the single crystals with
this assumption

N NP: AP5000554

...essary to equalize

...pointed out in the conclusion that the calculation yield an upper bound
...re ting may accel-

SUBMITTED: c 50 uib

Card 2/2

ACC NR: AP6003585 (N) SOURCE CODE: UR/0170/66/010/001/0064/0067

AUTHOR: Kuznetsov, N. M.; Oleynik, V. N.

ORG: Higher Naval Engineering Institute im. F. E. Dzerzhinskiy, Leningrad (Vyssheye voyennomorskoye inzhenernoye uchilishche)

TITLE: Use of the theory of thermodynamic similarity for the generalization of experimental data on the heat transfer of boiling organic coolants.

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 10, no. 1, 1966, 64-67

TOPIC TAGS: coolant, heat transfer, thermodynamic property, heat transfer coefficient

ABSTRACT: The authors demonstrate how the basic concepts in the theory of thermodynamic similarity may be applied for the generalization of experimental data on the heat transfer of boiling fluids. The following formula is proposed:

$$\alpha = 190 \frac{p_{\kappa}^{1/6}}{T_{\kappa}^{7/6} \cdot M^{1/6}} \left(\frac{p}{p_{\kappa}}\right)^{0.1} \left[1 + 4.65\left(\frac{p}{p_{\kappa}}\right)^{1.16}\right] q^{15}. \tag{1}$$

The experimental data of the authors on the boiling of a diphenyl mixture (DPM) and mono-isopropyldiphenyl (MIPD) in a tube and annular ducts of a natural-circulation circuit at pressures of $10^5 - 8 \cdot 10^5$ n/m^2 and thermal loads of $50 \cdot 10^3 - 380 \cdot 10^3$ w/m^2 were compared with the

Card   1/2   UDC: 536.248.2 + 536.24

ACC NR: AP6003585

formula (1). The results showed a distinctly appreciable deviation between the theoretical
and experimental data in the heat transfer coefficient values. The deviation of the results
and reasons for the deviation are discussed. It is conluded that the formula obtained makes
it possible to calculate the heat transfer coefficients during the boiling of organic coolants
which are thermodynamically similar to DPM and MIPD on the basis of information on the
critical parameters of a boiling fluid and its molecular weight. Orig. art. has: 9 formulas
and 2 figures.

SUB CODE: 11, 20 / SUBM DATE: 16Feb65 / ORIG REF: 004

Card   2/2

L 2124-66   EWT(1)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2   IJP(c)   AT

ACCESSION NR: AP5021900   UR/0207/65/000/004/0010/0020

AUTHOR: Kuznetsov, N. M. (Moscow); Rayzer, Yu. P. (Moscow)

TITLE: Electron recombination in a plasma expanding in vacuum

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 4, 1965, 10-20

TOPIC TAGS: plasma, ionization, recombination, ionization degree, recombination coefficient, triple collision

ABSTRACT: In an earlier theoretical work by one of the authors (Rayzer, Yu. P. On the residual ionization of a gas expanding in vacuum. ZhETF, 37, 2, 1959, 580), photorecombination and 3-body recombination processes occurring in a gas cloud expanding in vacuum were briefly investigated. This study is now extended and reviewed in the light of theoretical and experimental data recently published in the Soviet Union and in the West. It is shown that, contrary to the findings of the earlier work, if the expanding gas cools rapidly, recombination does not stop, but diminishes infinitely. Because the cooling of the

Card 1/2

L 2124-66
ACCESSION NR: AP5021900   O

gas is in turn an effect of heat liberation during recombination, the
process must be described by a system of equations in which kinetics
and energy are related to unknown time functions. The comparison of
photorecombination coefficients and recombinations due to triple
collisions indicates that at excessively small electron densities, the
latter collisions prevail. From then on neither photorecombination
nor triple collisions (with atoms being the third particles) play any
part. When the deactivation of a highly excited atom takes place
rapidly when compared to the speed of the change of electron density
and temperature, the recombination energy is liberated immediately
after the electron capture by the ion. Only this part of the recom-
bination energy turns into heat, which is transferred to the electrons
during the deactivation of excited atoms by second-kind collisions. If
the gas is transparent, the remaining part is almost completely lost.
Orig. art. has: 25 formulas and 2 figures.   [ZL]

ASSOCIATION: none

SUBMITTED: 11May65   ENCL: 00   SUB CODE: NP,ME

NO REF SOV: 006   OTHER: 004   ATD PRESS: 4117
Card 2/2

KUZNETSOV, N.M.

Interrelation between the vibrational relaxation and dissociation
of diatomic molecules. Dokl. AN SSSR 164 no.5:1097-1100 0 '65.

(MIRA 18:10)

1. Institut khimicheskoy fiziki AN SSSR. Submitted March 27, 1965.

L 9548-66   EWT(1)/ETC/EWG(m)/ETC(m)   JW

ACC NR: AP6000210
44,55

AUTHOR: Kuznetsov, N. M.

SOURCE CODE: UR/0056/65/049/005/1526/1531
44
B

ORG: Institute of Chemical Physics, Academy of Sciences SSSR, (Institut khimicheskoy fiziki AN SSSR)

TITLE: Deformations and gas dynamic discontinuities in pulse transformation of metastable substances

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 5, 1965, 1526-1531

TOPIC TAGS: detonation, condensation, explosion, thermodynamics 21,44,55

ABSTRACT: An analysis was made of the thermodynamic conditions under which a substance in a metastable state can be transformed into the equilibrium state by a detonation process. The analysis was based on the concept that a metastable substance is basically similar to an explosive so that a Hugoniot curve can be used in studying the problem. Formulas for the volume change by isobaric and isentropic transition from metastable to equilibrium conditions were derived and crystallization of a subcooled liquid and condensation shock in a supersaturated vapor were considered. In phase transformations, a detonation-like phase transformation with possible overcompression or a slow phase transformation which propagates on the surface of the sub-

Card 1/2

ACC NR: AP6000210

stance in the metastable phase only may be analogous to slow deflagration or detona-
tion processes. Orig. art. has: 8 formulas and 2 figures.

SUB CODE: 21, 07/ SUBM DATE: 02Jun65/ ORIG REF: 011/ OTH REF: 004/

ATD PRESS: 4157   [PV]

Card 2/2

L 33030-66   EWT(m)/EWP(1)   RM

ACC NR: AP6014399   SOURCE CODE: UR/0096/66/000/001/0070/0071

AUTHOR: Kuznetsov, N. M. (Doctor of technical sciences, Professor); 2/
Burakov, B. A. (Candidate of technical sciences)   /8

ORG: Higher Naval Engineering School im. F. E. Dzerzhinskiy (Vyssheye
voenno-morskoe inzhenernoye uchilishche)

TITLE: Investigation of critical heat fluxes in the boiling of diphenyl
and diphenyl oxide in a large volume

SOURCE: Teploenergetika, no. 1, 1966, 70-71

TOPIC TAGS: heat flux, boiling, organic oxide

ABSTRACT: The article gives the results of an experimental
investigation of critical heat fluxes in the boiling of diphenyl and
diphenyl oxide in a large volume, over a range of pressures from
atmospheric up to the critical. The appearance of the boiling crisis
was studied in vertical tubes made of Type 1Kh18N9T stainless steel,
with a diameter of 6/4 mm and a length from 150 to 300 mm, located along
the axis of a cylindrical drum with a diameter of 180 mm and a length of
800 mm, filled with heat transfer medium, diphenyl or diphenyl oxide.
The experimental results are shown in a figure. It can be seen from

Card 1/2   •   UDC: 662.987.547.62.001.45

L 33030-66

ACC NR: AP6014399   O

the figure that the nature of the dependence of the critical heat loads
on the pressure agrees qualitatively with the experimental data for
water. Quantitatively, the heat loads for the boiling of the organic
heat transfer media are approximately five times less than for water.
Orig. art. has: 1 formula and 1 figure.

SUB CODE: 07, 20/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 001

Card 2/2

L 22357-66   EWT(1)/EWA(h)

ACC NR: AP6013259

SOURCE CODE: UR/0413/66/000/008/0049/0049

INVENTOR: Abramtsev, Ye. P.; Kuznetsov, N. M.; Loshkarev, P. A.   3/

ORG: none   B

TITLE: Motor-type time relay. Class 21, No. 180698 [announced by the Kuznetsk Scien-
tific Research Institute of Coal Beneficiation (Kuznetskiy nauchno-issledovatel'skiy
Institut ugleobogashcheniya)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 49

TOPIC TAGS: time relay, photoelectric cell

ABSTRACT: This Author Certificate introduces a motor-type time relay containing an
illuminator, photocells connected with the object control circuit, and a programming

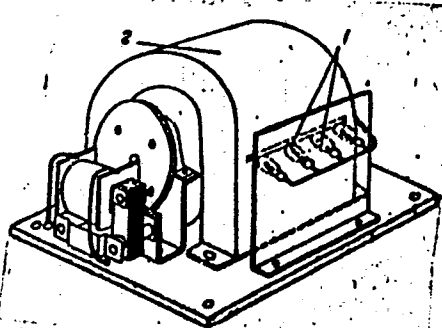Fig. 1. Motor-type time relay

1 - Illuminators; 2 - programming
element.

Card   1/2

UDC: 621.318.563.5

L 22357-66

ACC NR: AP6013259   O

element which shifts between the illuminator and the photocells (see Fig. 1). In
order to improve the reliability of relay operation, the programming element is
designed in the form of a transparent rotating cone. Inside the cone are photo-
resistors and on its surface is a punched tape. The illuminator is fitted with a
reflector designed in the form of a parabolic mirror which covers the luminous slot.
Orig. art. has: 1 figure.   [DW]

SUB CODE: 09/ SUBM DATE: 23Oct62/ ATD PRESS: 4241

Card   2/2

L5603-66   EWT(1)/EWT(m)/EWP(j)   IJP(c)   WW/JW/HW

ACC NR: AP6021937   (N)   SOURCE CODE: UR/0143/66/000/003/0114/0118

AUTHOR: Kuznetsov, N. M. (Doctor of Technical Sciences); Oleynik, V. N. (Engineer)

ORG: Higher Naval Engineering Order of Lenin School im. F. E. Dzerzhinskiy, Leningrad (Vyssheye voyenno-morskoye inzhenernoye uchilishche)

TITLE: Heat transfer to an organic heat carrier in annuli

SOURCE: IVUZ. Energetika, no. 3, 1966, 114-118

TOPIC TAGS: heat transfer, heat carrier, Reynolds number, Nusselt number, Prandtl number, fluid viscosity

ABSTRACT: The heat transfer to a diphenyl mixture was studied because there are no published data on heat transfer to organic heat carriers in annuli. The heat transfer was studied in annuli ranging in width from 1.5 to 6 mm and in a round tube with a diameter of 17 mm. The data obtained made it possible to determine the effect of geometric dimensions of annuli on heat transfer and to set up a criterion formula. The experimental data on the heat transfer to a diphenyl mixture in annuli are in good agreement with the criterion formula. The experimental data on heat transfer to a diphenyl mixture in round tubes are in good agreement with the data of other scientists and can be described by the following criterion formula

$$Nu = 0.027 Re^{0.8} Pr^{0.36} \frac{\mu}{\mu_w}^{0.11}$$, where Nu, Re, and Pr are the Nusselt,

Card 1/2

L 45603-66

ACC NR: AP6021937

Reynolds, and Prandtl numbers, respectively, and μ and μ_W are fluid viscosity and fluid viscosity at temperature of wall of inner tube, respectively. Orig. art. has 3 figures, 1 table, and 7 formulas.

SUB CODE: 20/   SUBM DATE: 15Feb65/   ORIG REF: 006/   OTH REF: 008

Card 2/2

Apparatus for distilling alcohol. N. M. Kuznetsov and N. N. Alekseev. Russ. 35,183, March 31, 1934. Construction details of a still and rectification tower.

CA

16

Alcohol. A. P. Bereashtein and N. M. Kuznetsov. Russ. 39,727, Nov. 20, 1934. The mash from starch material, such as potato pulp, is heated to 80° to avoid saccharification and malt is added and fermentation conducted in the usual manner.

A 5 0 - 36 1   METALLURGICAL LITERATURE CLASSIFICATION

Application of photoelectric colorimetry to water an-
alysis. N. Kuznetsov and A. Moiseev. Zavodskaya Lab.
5, 1325-8(1936).—The photoelec. cell is used in the colori-
metric detn. of soil impurities in water. Free Cl by the
starch-I reaction and H₂S by PbS-hydrosol formation are
detd. with the aid of the photoelec. cell. Illustrations
and graphs.
                                                Chas. Blanc

/6

Improvements in laboratory practice. N. Kuznetsov. *Spirto-Vodochnaya Prom.* 16, No. 10, 31-3(1939).—Suggestions are offered for improved operation of control labs. in the alc. industry, and for lab. assistance with factory problems. O.10%.   Julian F. Smith

CA

PROCESSES AND PROPERTIES INDEX

Ways in which distillery production schedules can be modernized. N. Kuznetsov. *Spirts-* *(achno*ye *Prom.* 17, No. 8, 3-8(1940).— Improvements in mash prepn., yeast culturing, fermentz and distr. are suggested, and illustrated with drawings of sov. Julian F. Smith

16

CA

PROCESSES AND PROPERTIES INDEX

' Technological regime in alcohol plants. N. Kuznetsov
and P. Reizin. - Piskhevaya Prom. 1, No. 3, 3-5(1941). -
A review of technological progress in the Soviet alc. indus-
try.   S. Gottlieb

16

METALLURGICAL LITERATURE CLASSIFICATION

KUZNETSOV, N.M.

(2)

The hot processing of potatoes and grains [for mash].
N. M. Kuznetsov (All-Union Sci. Research Inst. Spiritous
Ind.; Kiev). Spirtonaya Prom. 20, No. 1, 8-10(1954).--
Potatoes, oats, rye, millet, barley, maize, or wheat (187-190
kg. per cu.m. of digestion space) is mashed with 2.8-3.5 l.
of water per kg. of raw material to give a mash contg. 15.5-
17.0% dry matter. The amount of H_2O required depends
on the kind of raw material and on its starch content. Pres-
sures (4-5 atm.) and the times of application (50-95 min.)
too are functions of the material used. The finished mash
is sterilized by adding 20 ml. of a 40% CH_2O soln. per deca-
liter. The temp. at the end of saccharification is 57-8°;
after addn. of malt, 48-50°. This manner of preparation
leaves very little starch undissolved; it also breaks down
much of the amino-acid content. A schematic drawing of
the app. is presented.   Werner Jacobson

KUZNETSOV,N.M.

For technical progress in the alcohol, liqueur and vodka in-
dustry. Spirt.prom.21 no.2:1-3 '55.   (MLRA 8:10)

1. Glavnoye upravleniye spirtnoy promyshlennosti
                     (Distilling industries)

ARONOVICH, Vladimir Veniaminovich, kandidat tekhnicheskikh nauk; KUZNETSOV,
N.N., retsenzent; SKOBLO, D.I., retsenzent; SEREGIN, P.V., otvet-
redaktor; MASLOVA, Ye.F., redaktor; GOTLIB, E.M., tekhnicheskiy
redaktor

[Instruments and regulators in the distilling industry] Pribory i
reguliatory spirtovoi promyshlennosti. Moskva, Pishchepromizdat, 1956.
300 p.   (MIRA 9:12)
        (Distilling industries--Equipment and supplies)

KUZNETSOV, N.M.

Means for increasing the productivity of grain preparation
sections in continuous heat processing of starchy raw materials.
Spirt. prom. 22 no.3:5-8 '56.   (MLRA 9:11)

1. Ministerstvo promyshlennosti prodovol'stvennykh tovarov
SSSR.
                    (Grain milling)

ASHKINUZI, Z.K., rukovoditel' brigady; BERENSHTEYN, A.F.; KUZNETSOV, N.M.;
RABINOVICH, B.D.; CHATSKIY, P.A.; SIDORENKO, D.P.; KOVALEVSKAYA,
A.I., red.; YAROV, E.M., tekhn.red.

[Continuous thermal processing of starchy raw materials] Nepre-
ryvnaia teplovaia obrabotka krakhmalistogo syr'ia. Moskva, Pishche-
promizdat, 1957. 59 p.   (MIRA 12:4)

1. Kiyevskiy filial Vsesoyuznogo nauchno-issledovatel'skogo insti-
tuta spirtovoy promyshlennosti (for Ashkinuzi).
                    (Distilling industries)

KOMAROV, Avramiy Fedorovich; KOLOSKOV, Sergey Pavlovich; KUZNETSOV, N.M., spetsredaktor; KHMEL'NITSKAYA, Kh.Z., redaktor; SEREGIN, P.V., kandidat tekhnicheskikh nauk, retsenzent; KISINA, Ye.I., tekhnicheskiy redaktor.

[Mechanization of labor consuming operations in distilleries]
Mekhanizatsiia trudoemkikh rabot na spirtovykh zavodakh. Moskva, Pishchepromizdat, 1957. 173 p.   (MIRA 10:6)

        (Distilling industries)

KUZNETSOV, N.M.

Alcohol industry. Spirt.prom. 23 no.7:1-10 '57.   (MIRA 11:1)
                (Alcohol)

YAROVENKO, Viktor L'vovich; KUZNETSOV, N.M., retsenzent; MALCHENKO, A.L., spetsred.; KOVALEVSKAYA, A.I., red.; TARASOVA, N.M., tekhn.red.

[Continuous alcohol fermentation] Potochnyi metod spirtovogo brozheniia. Moskva, Pishchepromizdat, 1958. 127 p. (MIRA 12:4)
(Fermentation)

GRYAZNOV, Vyacheslav Pavlovich, kand. tekhn. nauk; ZELIKMAN, Grigoriy
Fedorovich, kand. tekhn. nauk; KUZNETSOV, N.M., inzh., retsenzent;
FERTMAN, G.I., kand. tekhn. nauk, spetsred.; RESH, G.S., red.;
CHEBYSHEVA, Ye.A., tekhn. red.

[Calculation, storage and transportation of distilled spirits]
Uchet, khranenie i transportifovka spirta. Moskva, Pishchepromizdat,
1958. 179 p.   (MIRA 11:7)
                              (Alcohols)

KUZNETSOV, N.M.

Processing sugar beets at alcohol plants. Spirt. prom. 24
no.7:4-6 '58.
(MIRA 11:11)
(Sugar beets)   (Alcohol)

STABNIKOV, Vsevolod Nikolayevich; KUZNETSOV, N.M., retsenzent;
      KAFAROV, V.V., retsenzent; KOVALEVSKAYA, A.I., red.;
      KISINA, Ye.I., tekhn. red.

      [Distillation and rectification of alcohol]Peregonka i
      rektifikatsiia spirta. Moskva, Pishchepromizdat, 1962.
      503 p.   (MIRA 15:11)
         (Distillation) (Distillation apparatus)

PUSHKIN, Nikita Ivanovich; BUZNIK, V.M., doktor tekhn. nauk,
    prof., retsenzent; GASANOV, G.A., dots., retsenzent;
    KUZNETSOV, N.M., nauchn. red.; SMIRNOV, Yu.I., red.

    [Marine steam boilers; theory and calculations] Sudovye
    parovye kotly; teoriia i raschety. Leningrad, Sudo-
    stroenie, 1965. 510 p.   (MIRA 18:7)

ACC NR: AP7000049   SOURCE CODE: UR/0207/66/000/005/0042/0049

AUTHOR: Kuznetsov, N. M. (Moscow)

ORG: none

TITLE: Kinetics of electron recombination in molecular gas propagating into a vacuum

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1966, 42-49

TOPIC TAGS: electron recombination, space vacuum, high altitude explosion,
            chemical explosion

ABSTRACT: Kinematics of a diatomic and multiatomic gas propagating into a vacuum is
considered. Recombination, dissociation and charge exchange reactions with account of
the negative ions are included in the derived rate formulas. This study is modeled
on the monoatomic theory of explosive gas flow and the similar and distinguishing cha-
racteristics of the two theories are enumerated. The time-dependent concentrations of
charged particles in the ionized nonequilibrium gas are expressed by quadratures for
known reaction rates. In addition, the instant of the departure of electrons and ne-
gative and positive ions from equilibrium is obtained. It is shown that even in cases
where reaction rates are known within an order of magnitude, a good prediction of the
equilibrium state is possible since departure from equilibrium is relative to the po-
sitive ions, while electrons and negative ions remain in equilibrium considerably long-
er. Orig. art. has: 1 figure, 35 formulas.

SUB CODE: 20/   SUBM DATE: 04Mar66/   ORIG REF: 009/   OTH REF: 006
Card 1/1

ACC NR: AP6036432   (N)   SOURCE CODE: UR/0096/66/000/012/0057/0059

AUTHOR: Kuznetsov, N. M. (Doctor of Technical Sciences, Professor); Oleynik, V. N. (Engineer)

ORG: Naval College of Engineering im. Dzerzhinskiy (Vyssheye Voyenno-Morskoye Inzhenernoye uchilishche)

TITLE: Study of heat transfer during boiling of organic heat carriers

SOURCE: Teploenergetika, no. 12, 1966, 57-59

TOPIC TAGS: heat transfer coefficient, heat carrier, boiling

ABSTRACT: Heat transfer was studied experimentally during boiling of a diphenyl mixture and monoisopropylbiphenyl in a tube and in annular channels with natural circulation, at pressures of $10^5 - 8 \times 10^5$ n/m^2 and thermal loads of $50 \times 10^3 - 470 \times 10^3$ W/m^2. In the case of the biphenyl mixture, all the experiments showed that the heat transfer coefficient is independent of the velocity of the natural circulation, is proportional to the thermal load, and increases with the pressure. The experimental points are described by the empirical formula $\alpha = 1.28q^{0.7}p^{0.24}$. In the case of monoisopropylbiphenyl, the heat transfer coefficient is independent of the circulation velocity and of the geometrical dimensions of the heating surface; as in the case of the biphenyl mixture, it depends only on the thermal load and pressure of

Card   1/2   UDC: 536.24.1.662.987.661.7.001.5

ACC NR: AP6036432

the boiling liquid. It is expressed by the formula $\alpha = 1.23q^{0.7}p^{0.19}$. Orig. art. has: 4 figures, 1 table and 2 formulas.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 007

Card   2/2

36055-66

ACC NR: AP6014076   EWT(1)/EEC(k)-2/T/EWP(k)   IJP(e)   WG

SOURCE CODE: UR/0294/66/004/002/0282/0284

AUTHOR: Kuznetsov, N. M.

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki, AN SSSR)

43
B

TITLE: Vibrational relaxation in a recombining expanding gas

SOURCE: Teplofizika vysokikh temperatur, v. 4, no. 2, 1966, 282-284

TOPIC TAGS: vibration relaxation, gas relaxation, gas dissociation, gas recombination

ABSTRACT: The process of vibrational relaxation of a diatomic molecule in the presence of dissociation or recombination can be described by the system of equations

$$\frac{dE^*}{dt} = -\frac{E - E^*}{\tau} + (D - E^*)\frac{d\alpha^*}{\alpha^* dt},$$

$$\frac{d\alpha^*}{dt} = -\frac{1}{2}\frac{d\beta^*}{dt} = (\beta^*)^2 K_+ - \alpha^* K_-,$$ (1)

(2)

where E^* is the vibrational energy of the molecule, which is a function of the temperature of the vibrations T^*; E is the equilibrium value of E^*; D is the energy of dissociation; α is the ratio of the number of

Card 1/2

UDC: 536.411.536.782.537.568.539.194

L 36055-66

ACC NR: AP6014076

molecules to the number of molecules in the undissociated gas; t is the time; K^+ and K^- are constants of the rates of dissociation and recombination; $\beta^* = 2(1-\alpha^*)$ is the relative concentration of atoms; δ is the ratio of the density of the gas to its normal density; τ is the time of the vibrational relaxation. The article proceeds to a mathematical solution of the problem on the above premises. Orig. art. has: 14 formulas.

SUB CODE: 20/ SUBM DATE: 27Mar65/ ORIG REF: 003/ OTH REF: 003

Card 2/2   vmb

L 25671-66   EWT(1)/EWP(m)/EWT(m)/ETC(f)/EWG(m)/EWA(d)/T/EWA(h)/ETC(m)-6/EWA(1)
ACC NR: AM6008326 IJP(c)   WW/JW/ Monograph   UR/
                  JWD/WE/RM
Kuznetsov, Nikolay Mikhaylovich   62
                                                                  13+1

Thermodynamic functions and shock adiabatic curves of air at high
   temperatures (Termodinamicheskiye funktsii i udarnyye adiabaty
   vozdukha pri vysokikh temperaturakh) Moscow, Izd-vo "Mashinostro-
   yeniye", 1965. 462 p. biblio., tables. Errata slip inserted.
   2000 copies printed.

TOPIC TAGS: atmospheric physics, mathematical table, thermodyna-
   mic function, atmospheric density, atmospheric ionization, elec-
   tromagnetic radiation

PURPOSE AND COVERAGE: This book is intended for specialists engaged
   in engineering calculations in the fields of supersonic aerody-
   namics and the physics of explosion phenomena; it should also
   be useful to students in institutions of higher learning. The
   book contains tables of thermodynamic functions for air and elec-
   tromagnetic radiation, concentrations of components of air, ion-
   ization equilibrium constants for atoms and all ions of nitro-
   gen, oxygen, and argon, shock adiabatic curves, and mean free
   paths of equilibrium electromagnetic radiation. All tables
   were compiled from computations and do not contain data from

Card 1/3   UDC: 536.70/.79.001.24(083.3): 546.217

L 25671-66

ACC NR: AM6008326   O

other sources, except essential initial data. They cover tem-
peratures ranging from 200 to 3 x 10^6 °K and densities from
10^{-6} to 30 ρ_0 (where ρ_0 is the normal density of air). The text
includes essential explanations of the tables, procedures for
computations, and initial experimental and theoretical data.

TABLE OF CONTENTS [abridged]:

Card 2/3

L 25671-66
ACC NR: AM6008326

Tables IV. Ionization equilibrium constants fro atoms and all ions
   of nitrogen, oxygen, and argon -- 387
Tables V. Shock adiabatic curves -- 397
Tables VI. Mean free paths and average absorption coefficients
   of electromagnetic radiation -- 447
Appendix 1. Electron energy levels and ionization potentials of
   atoms and ions of nitrogen, oxygen, and argon used for computing
   electronic statistical sums -- 456
Appendix 2. The density, height, temperature, and pressure of the
   standard atmosphere -- 460

SUB CODE: 04/ SUBM DATE: 03Aug65/ ORIG REF: 014/ OTH REF: 012

Card 3/3

KUZNETSOV, N.M., podpolkovnik meditsinskoy sluzhby.

Scientific Conference of Physicians of the Moscow Military
District. Voen.-med. zhur. no. 1:93-94 Ja '66   (MIRA 19:2)

KUZNETSOV, N.M.; OLEYNIK, V.N.

Use of the theory of thermodynamic similarity in generalizing
the experimental data on the heat transfer from boiling organic
heat transfer agents. Inzh.-fiz. zhur. 10 no.1:64-67 Ja '66.
(MIRA 19:2)

1. Vyssheye voyenno-morskoye inzhenernoye uchi'ishche im.
Dzerzhinskogo, Leningrad. Submitted February 16, 1965.

KUZNETSOV, Nikolay Mikhaylovich; SILENCHUK, S.M., red.

[Thermodynamic functions and shock adiabats of the air
at high temperatures] Termodinamicheskie funktsii i udarnye
adiabaty vozdukha pri vysokikh temperaturakh. Moskva, Ma-
shinostroenie, 1965. 462 p.   (MIRA 19:1)

KUZNETSOV, N.N.

Calculating a flow in a semibounded cylindrical tube with a piston.
Sbor. rab. VTS MGU 4:255-260 '65.   (MIRA 18:9)

USSR/Human and Animal Morphology - Digestive System   Q-3

Abs Jour   : Referat Zhur - Biologii, No 16, 1957, 70339

Author   : Kusnetsov, N.N.
Title   : Histological Structure and Some Properties of Peritoneal
              Plates as Surgical Material.

Orig Pub   : Tr. Kishenevsk. med. in-ta, 1955, 4, 127-137

Abstract   : Dry plates of serous membrane of the appendix of horned
              cattle was kept 2 minutes in 70 deg. alcohol, after
              which it was studied by staining procedures. The histo-
              logical structure of the plates was preserved: cellular
              elements, collagenous and elastic fibers, blood vessels
              etc. Impregnation with silver after Bil'shovsky-Gross
              method revealed nerve fibers. The plates preserved thru
              dehydration retain their strength; to tear them requi-
              res 6-7kg per 1 sq.mm. of perpendicular section 1.
              After being kept in physiol. solution the plates acquire
              considerable elasticity, which reaches a maximum at

Card 1/2   - 66 -

Abs Jour   : Referat Zhur - Biologii, No 16, 1957, 70339

              boiling of autoclaving, when the maximum pressure of
              16.5 kg per sq.mm is achieved by perpendicular section
              of the superficial layers. The use of these plates is
              recommended for plastic repair of superficial burns,
              tropical ulcers etc. The plates are sterilised by
              keeping it in formalin for two-three days, following it
              by washing in Phisiol.solu; autoclaving or boiling can
              be also used.

Card 2/2   - 67 -

KUZNETSOV, N. N.

"Method for the introduction of antibiotics into the animal husbandry of Kurgan Oblast'

Veterinariya, Vol. 38, No. 5, 1961

Kuznetsov, N. N. - Head of the Veterinary Department of Kurgan Oblast' Agricultural Administration

KUZNETSOV, N.N. (Moskva)

Hyperbolic systems of linear equations with discontinuous
coefficients. Zhur.vych.mat.i mat.fiz. 3 no.2:299-313 Mr-Ap '63.
(MIRA 16:4)
(Differential equations, Linear)

L 12743-63   BDS/EWT(d)/FCC(w)   AFFTC   IJP(C)

S/208/63/003/002/006/014   *51*

AUTHOR: Kuznetsov, N. N.

TITLE: Hyperbolic systems of linear equations with discontinuous coefficients

PERIODICAL: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 2, 1963, 299-313

TEXT: The paper investigates the hyperbolic system of linear equations of type

$$L(u) \equiv \frac{\partial u}{\partial t} + \frac{\partial Au}{\partial x} + Bu = f(t, x) \qquad (1)$$

with coefficients A having discontinuities along certain lines, and having otherwise bounded derivatives. The author proves the uniquences of the sectionally-continuous and sectionally-smooth solution for the Cauchy problem of the system (1). Solutions are joined along the coefficient-discontinuity lines using the conditions

$$\left[uD_k - Au\right] \equiv (u^- - u^+)D_k - (A^- u^- - A^+ u^+) = 0 \qquad (5)$$

where $D_k = (\partial \chi_j / \partial t)_{t=t_k}$, $(x = \chi_j(t))$. A similar result can be obtained for the

Card 1/2

L 12743-63

S/208/63/003/002/006/014

Hyperbolic systems of linear ....

O

the nondivergent system of equations

$$L_1(u) \equiv \frac{\partial u}{\partial t} + A \frac{\partial u}{\partial x} + Bu = f \qquad (13)$$

provided the solutions join continuously at the discontinuity lines. The method, proposed by Gol'mgren is the same as the one used by S. K. Godunov (Ref. 1: Matem. sb., 1956, 40 (82), No. 4, 467-478) for the uniqueness investigation of the solution to the Cauchy problem of certain particular systems of two equations of the form (1). The author studied the uniqueness of equations of type (13) using the method of characteristics as presented in the paper by B. L. Rozhdestvenskiy (Ref. 2: Uspekhi matem. nauk, 1960, 15, no. 6 (96), 59-117).

SUBMITTED: March 29, 1962

Card 2/2

ACCESSION NR: AP4039011   S/0055/64/000/003/0025/0030

AUTHORS: Kuznetsov, N. N.; Ch'i, Chung-t'ao

TITLE: Uniqueness theorem in the theory of hyperbolic quasilinear equations

SOURCE: Moscow. Universitet. Vestnik. Seriya 1. Matematika, mekhanika, no. 3, 1964, 25-30

TOPIC TAGS: hyperbolic equation, quasilinear equation, Cauchy problem, integral relation, Green formula, convexity, eigenvalue, eigenvector

ABSTRACT: The authors study, in the half-plane $t \geq 0$, the Cauchy problem for a hyperbolic system of quasilinear equations:

$$\frac{\partial u_i}{\partial t} + \frac{\partial \varphi_i(u, t, x)}{\partial x} = f_i(u, t, x), \quad u_i(0, x) = u_i^0(x), \quad i = 1, 2, \dots, n, \quad (1)$$

meaning the solutions of this problem in the generalized sense, namely, as functions satisfying not the differential equations (1) but integral relations, as a result of applying Green's formulas to them. Let $\mathfrak{A}$ be a bounded, convex, closed region

Card 1/4

ACCESSION NR: AP4039011

of the space $(u_1, u_2, \ldots, u_n)$, γ be the strip $|x| < \infty$, $0 \leq t \leq T$, in the (t,x) plane, and $\mathfrak{M} = \mathcal{U} \times \gamma$. They assume that $u^0(x) \in \mathcal{U}$ for any x and consider solutions $u(t,x)$ of problem (1) in the strip γ such that $u(t,x) \in \mathcal{U}$ for all $(t,x) \in \gamma$. Let the functions $\varphi(u,t,x)$ and $f_i(u,t,x)$ be respectively twice and once continuously differentiable in their entire argument in $\mathfrak{M}$. With respect to the hyperbolic system of equations (1), they assume that the eigenvalues of $\nu_i(u,t,x)$ of the matrix $(\partial \varphi_j/\partial u_s)$ are real and distinct, so that $\nu_i > \nu_{i+1}$ everywhere in $\mathfrak{M}$. $A(u,v,t,x)$ denotes a matrix defined by

$$\varphi(u,t,x) - \varphi(v,t,x) = A(u,v,t,x)(u-v). \qquad (2)$$

It can be assumed to be continuously differentiable in $\mathfrak{M}_1 = \mathcal{U} \times \mathcal{U} \times \gamma$. The matrix A is assumed to be chosen so that 1) its eigenvalues $\lambda_i(u,v,t,x)$ are real and distinct in $\mathfrak{M}_1$, and

$$[\lambda_i(u,v,t,x) - \lambda_i(u,u,t,x)][\lambda_i(u,v,t,x) - \lambda_i(v,v,t,x)] < 0 \quad (3)$$

Card 2/4

ACCESSION NR: AP4039011

(noting that $\lambda_i(u,u,tx) = \nu_i(u,t,x)$); 2) for each u, v from $\mathcal{U}$ such that the vectors u-v and $c_k(u,v,t,x)$ are co-linear (c_i are eigenvectors of the matrix A), and for any $w \in \mathcal{U}$

$$\lambda_{k+1}(v,w,t,x) < \lambda_k(u,v,t,x) < \lambda_{k-1}(u,w,t,x); \quad (4)$$

3) for each u, v from $\mathcal{U}$ and w, z from $\mathcal{U}$ such that u-w $\sim$ $c_k(u,w,t,x)$, v-z $\sim c_s$ (v,z,t,x), where s is one of the numbers k-1,k,k+1, the vectors $c_1(u,v,t,x),c_2(u,v,t,x),\ldots,c_p(u,v,t,x),c_{p+1}(\omega,z,t,x),\ldots,c_n(\omega,z,t,x)$ are linearly independent for p = k-1,k. The authors consider piecewise-continuous and piecewise-smooth initial functions $u^o(x)$ and piecewise-continuous solutions of problem (1) which have bounded derivatives in the regions between the lines of discontinuity. The line of discontinuity x = $\psi(t)$ in the solution u(t,x) is called admissible if there exists a number k such that

$$v_k(u^+,t,x) < D < v_k(u^-,t,x), \quad (5)$$

Card 3/4

ACCESSION NR: AP4039011

where $D = \psi'(t)$, $u^{\pm} = u(t, \psi \pm 0)$, and this line consists of a finite number of arcs on which k is constant. It is also assumed that distinct lines of discontinuity do not intersect at more than a finite number of points. Theorem: Under the above assumptions relating to the functions φ_i and f_i, problem (1) has, in the described class of functions, not more than one solution, all of whose lines of discontinuity are admissible. Orig. art. has: 10 formulas.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet; Kafedra vy*chislitel'noy matematiki (Moscow State University, Department of Computer Mathematics)

SUBMITTED: 27Mar63   DATE ACQ: 09Jun64   ENCL: 00

SUB CODE: MA   NO REF SOV: 004   OTHER: 001

Card 4/4

ACCESSION NR: AP4037263   8/0208/64/004/003/0571/0576

AUTHOR: Kuznetsov, N. N. (Moscow)

TITLE: Uniqueness of the solution of a hyperbolic system of linear equations with discontinuous coefficients

SOURCE: Zhurnal vy*chislitel'noy matematiki i matematicheskoy fiziki, v. 4, no. 3, 1964, 571-576

TOPIC TAGS: unique solution, hyperbolic linear equation, discontinuous coefficient, Cauchy problem, discontinuity line

ABSTRACT: The author proves uniqueness of the solution of the Cauchy problem for

$$\frac{\partial u}{\partial t} + \frac{\partial A u}{\partial x} + Bu = f, \qquad (1)$$

in a certain region bounded from the left and the right, under the basic restrictions that all lines of discontinuity are admissible and that each of them consists of a finite number of segments, subject to certain conditions. Orig. art. has: 14 formulas and 2 figures.

ASSOCIATION: none

SUBMITTED: 11Jan63   DATE ACQ: 09Jun64   ENCL: 00

SUB CODE: MA   NO REF SOV: 001   OTHER: 000

Card 1/1

KUZNETSOV, N.N.

New method of angioplasty. Trudy Kish.gos.med.inst. 13:3-9 '60.
(MIRA 16:2)

1. Kafedra gistologii Kishinevskogo gosudarstvennogo meditsinskogo
instituta.   (BLOOD VESSELS—SURGERY)

KUZNETSOV, N.N.; SHCHETININA, Ye., red.; POLONSKIY, S., tekhn. red.

[New heteroperitoneal preparations for restorative surgery and
tissue therapy; preserved plastic materials from the peritoneum of
cattle] Novye geteroperitoneal'nye preparaty dlia vosstanovitel'-
noi khirurgii i tkanevoi terapii; konservirovannyi plasticheskii
material iz briushiny krupnogo rogatogo skota. Kishinev, Gos.izd-
vo "Kartia Moldoveniaske," 1961. 157 p.   (MIRA 14:6)
                        (TISSUE EXTRACTS)

KUZNETSOV, N.N.; SHCHETININA, Ye., red.; KURMAÏEVA, T., tekhn.
red.

[Heteroperitoneal preparations in experiment and in the
clinic]Geteroperitoneal'nye preparaty v eksperimente i kli-
nike. Kishinev, Kartia moldoveniaske, 1962. 154 p.
(MIRA 16:1)

(PERITONIUM—TRANSPLANTATION)
(REGENERATION (BIOLOGY))

KUZNETSOV, N.K.

State of the carbohydrate function of the liver after resection
of different segments of the stomach and gastrectomy in cancer.
                                                      (MIRA 15:3)
Khirurgiia no.3:44-46 '62.

1. Iz 3-go khirurgicheskogo otdeleniya (nauchnyy rukovoditel' -
doktor med.nauk Ye.A. Pechatnikova) Instituta khirurgii imeni
A.V. Vishnevskogo (dir. - deystvitel'nyy chlen AMN SSSR prof.
A.A. Vishnevskiy) AMN SSSR.
     (LIVER) (CARBOHYDRATE METABOLISM) (STOMACH--CANCER)
                   (STOMACH--SURGERY)

KUZNETSOV, N.N., doktor med.nauk; PECHATNIKOVA, Ye.A.

    Study of the functional state of the liver following resection of
    various segments of the stomach and gastrectomy for cancer. Khirur-
    giia no.8:96-101 Ag '62.   (MIRA 15:8)

    1. Iz Instituta khirurgii imeni A.V. Vishnevskogo (dir. - deyst-
    vitel'nyy chlen AMN SSSR prof. A.A. Vishnevskiy) AMN SSSR.
       (STOMACH—CANCER) (STOMACH—SURGERY) (LIVER)

KUZNETSOV, N.N.

    Blood serum proteins and protein fractions in patients following
    resection of various segments of the stomach and gastrectomy for
    cancer. Lab. delo 8 no.3:36 Mr '62.   (MIRA 15:5)

    1. III khirurgicheskoye otdeleniye (nauchnyy rukovoditel' Ye.A.
    Pechatnikova) Instituta khirurgii imeni A.V.Vishneskogo AMN SSSR.
              (BLOOD PROTEINS)   (STOMACH--CANCER)

KUZNETSOV, N.N.

Novocaine block as a method of pathogenetic therapy for gastric
peptic ulcer. Sov.Med. 27 no.7:124-125 Jl'63.   (MIRA 16:9)

1. Iz Nagatinskoy lineynoy bol'nitsy (glavnyy vrach V.G.
Bogdanov) Moskovsko-Oksko-Volshskogo vodnogo otdela zdravo-
okhraneniya.
            (STOMACH—ULCERS)   (NOVOCAINE)

KUZNETSOV, N.N.; PECHATNIKOVA, Ye.A., doktor med. nauk (Moskva, B-78,
       Sadovo-Spasskaya, d.21, kv. 178)

       Functional state of the liver patients following radical
       surgery on the stomach. Vest. Khir. 91 no.10:105-107 O
       '63.   (MIRA 17:7)

       1. Iz Instituta khirurgii imeni A.V. Vishnevskogo (dir. - prof.
       A.A. Vishnevskiy) i Nagatinskoy lineynoy bol'nitsy Moskovsko-
       Oksko-Volzhskogo vodzdravotdela (glavnyy vrach - N.N. Kuznetsov).

KUZNETSOV, N.N.

Some liver functions in peptic ulcer and polyposis of the stomach.
Khirurgiia 39 no.11:44-47 N '63.

(MIRA 17:11)

1. Iz Instituta khirurgii imeni A.V. Vishnevskogo (dir. - deyst-
vitel'nyy chlen AMN SSSR prof. A.A. Vishnevskiy) i khirurgicheskogo
otdeleniya Nagatinskoy lineynoy bol'nitsy (glavnyy vrach V.G. Bog-
danov) Moskovsko-Oksko-Volzhskogo otdela vodnogo zdravookhraneniya.

16(1)   SOV/42-14-2-7/19
AUTHOR: Kuznetsov,N.N.
TITLE: On Some Asymptotic Properties of the Generalized Solution of
              the Cauchy Problem for a Quasilinear Equation of First Ordeı

PERIODICAL: Uspekhi matematicheskikh nauk,1959,Vol 14,Nr 2,pp 203-210(USSR)

ABSTRACT: The author considers the equation

$$(1) \quad \frac{\partial v}{\partial t} + \frac{\partial A(v,t,x)}{\partial x} + B(v,t,x) = 0$$

already treated by Oleynik $\boxed{\text{Ref 2}}$. (1) is called of the type 1
if the solution independent of the initial conditions for $t \to \infty$
has at most one non-vanishing point of discontinuity . If for
$t \to \infty$ all points of discontinuity vanish, then (1) is of the
type 2. (1) belongs to the type 3 if the solution has more than
one discontinuity not vanishing for $t \to \infty$. The paper contains
3 theorems. The first one formulates the necessary and sufficient
conditions for the fact when the solution belongs to the types
1 - 3.

Card 1/2

On Some Asymptotic Properties of the Generalized,   SOV/42-14-2-7/19
Solution of the Cauchy Problem for a
Quasilinear Equation of First Order

Theorem 2: Let $v(t,x)$ and $\bar{v}(t,x)$ be generalized solutions of the equation of the second type

$$\frac{\partial v}{\partial t} + \frac{\partial A(v,t)}{\partial x} = \alpha(t)v + \psi(t,x),$$

which correspond to the bounded initial conditions $v_o(x)$ and $\bar{v}_o(x)$. Then to every $\varepsilon > 0$ there exists a $T(\varepsilon)$ so that $|v(t,x) - \bar{v}(t,x)| < \varepsilon$ for $t > T(\varepsilon)$.

Theorem 3 contains a similar assertion for equations of the first type.

The author thanks B.L.Rozhdestvenskiy for advice.
There are 6 references, 4 of which are Soviet, and 2 American.

SUBMITTED: December 4, 1958

Card 2/2

16(1)
AUTHORS: Kuznetsov,N.N., and Rozhdestvenskiy,B.L.   SOV/42-14-2-8/19

TITLE: Construction of a Generalized Solution of the Cauchy Problem
for a Quasilinear Equation

PERIODICAL: Uspekhi matematicheskikh nauk,1959,Vol 14,Nr 2,pp 211-216(USSR)

ABSTRACT: The present paper contains no essentially new results. The
authors propose a somewhat simpler and more general method for
the construction of the generalized solution of the equation

$$\frac{\partial u}{\partial t} + \frac{\partial \varphi(u,t,x)}{\partial x} = 0$$

treated already several times by Oleynik.
There are 2 figures, and 5 references, 4 of which are Soviet,
and 1 German.

SUBMITTED: December 4, 1958

Card 1/1

16(1)
AUTHORS: Kuznetsov,N.N., and Rozhdestvenskiy,B.L.   SOV/20-126-3-7/69

TITLE: The Existence and Uniqueness of the Generalized Solution to
             Cauchy Problem for the Inhomogeneous Conservation Law

PERIODICAL: Doklady Akademii nauk SSSR,1959,Vol.126,Nr 3,pp 496-499 (USSR)

ABSTRACT: For the equation

(1) $$\frac{\partial u}{\partial t} + \frac{\partial \varphi(u,t,x)}{\partial x} = \psi(u,t,x)$$

the authors consider the Cauchy problem with the piecewise
continuous and bounded initial function $u_0(x)$. Let $u(t,x)$ be a

generalized piecewise smooth solution and $F(t,x) = \int_0^x \psi(u(t,\xi),t,\xi)d\xi$.

Then (1) can be represented in the form

$$\frac{\partial u}{\partial t} + \frac{\partial}{\partial x}\left[\varphi(u,t,x) - F(t,x)\right] = 0 .$$

The continuous function

Card 1/3